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Application No. : 09/900,129
Applicant : William W. Jacobsen
Filed : July 6, 2001
Group Art Unit : 1711
Examiner : U.K. Rajguru

Confirmation No. 6519

Attorney Docket No. : 022182-56
Customer No. : 24239

Title: Lignocellulose Fiber Filler For Thermoplastic Composite Compositions

Mail Stop: APPEAL
Commissioner for Patents
P.O. Box 1450
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Katie M. Efland
Katie M. Efland

APPEAL BRIEF UNDER 37 CFR 1.192

Sir:

This is an Appeal from the Final Rejection dated December 4, 2002, as reiterated in the Examiner's Advisory, dated March 21, 2003. A Notice of Appeal was filed June 3, 2003, setting a 2 month term of August 3, 2003 for filing the Appeal Brief.

Enclosed is a Petition for a 5-month extension of time, extending the term for filing the Appeal Brief up to and including **January 3, 2004**. Since January 3, 2004 is a Saturday, the actual deadline is Monday, **January 5, 2004**. Also enclosed is a \$1170.00 check (Small Entity Status) for the fees for the Appeal Brief and the Petition for extending the time.

Additionally, the Appeal Brief and its attachment of the Appendix (of claims 13 – 19 on Appeal) are enclosed in triplicate.

REAL PARTY IN INTEREST

The real party in interest is the assignee, WWJ, LLC, as evidenced by the assignment from the applicant/inventor, William W. Jacobsen, in U.S. Patent No. 6,284,098, which issued September 4, 2001, from U.S. Appln. No. 09/119,257, which is the parent of the subject divisional U.S. Appln. No. 09/900,129. The assignment was recorded on December 14, 1998 at REEL/FRAAME 9647/0220.

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RELATED APPLICATIONS

There are no other Appeals nor interferences known to appellant or appellant's legal representative which will directly affect or be directly affected by or have a bearing on the Board's decision in the instant pending Appeal.

STATUS OF CLAIMS

Claims 1 – 12 and 20 – 25 were canceled by a Preliminary Amendment filed simultaneously with filing the subject divisional U.S. Appln. No. 09/900,129 on July 6, 2001.

By a Supplement Amendment dated August 12, 2002, the word --wood-- was inserted before the word "fiber" both occurrences, and before the word "fibers" in independent claim 13.

No other amendments were made to claims 13-19, which remain in the application, and which are the claims presently pending on Appeal.

Claims 13-16, 18 and 19 stand finally rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al.

Claim 17 stands finally rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al., as applied to claims 13 and 16, and further in view of U.S. Patent No. 5,932,357 to Coates et al.

STATUS OF AMENDMENTS AFTER FINAL REJECTION

No amendments were filed subsequent to Final Rejection.

SUMMARY OF INVENTION

The present invention, as defined in claim 13 (the only independent claim), is directed to *a moldable thermoplastic composite composition* comprising certain amounts of two specific components:

- (1) *long, hair-like wood fiber*, more specifically, about 20 – 50 weight % discontinuous lignocellulose wood fiber filler, which comprises at least about 20% by weight discontinuous lignocellulose wood fibers having a length of at least about 15 mm and diameter of less than about 0.5 mm,
and
- (2) about 50 – 80 weight % *thermoplastic*.

Support is line 25 of page 3 through line 7 of page 4 of the specification.

More particularly, the present invention, as defined in dependent claim 16 is directed to a moldable thermoplastic composite in accordance with independent claim 13, upon which claim 16 depends, and further comprising up to about 10 % of a coupling agent.

Support is at lines 7 – 9 of page 4 of the specification. Specific kinds of optional coupling agents, such as maleic anhydride grafted polyethylene and maleic anhydride grafted polypropylene, which are tacky materials *but are not thermoplastics*, are recited at lines 1 – 10 of page 10 of the specification.

ISSUES

Regarding claims 13-16, 18 and 19, does the combination of Georgette et al. and Bergquist et al. render obvious, under §103(a), a moldable composition of long, hair-like wood cellulose fibers, having a length of at least about 15 mm and diameter of less than about 0.5 mm, and a thermoplastic such as polyethylene when Georgette et al. show a moldable composition of wood cellulose fiber and graft modified maleic anhydride polyethylene, which is a tacky material, not a thermoplastic, and thus adheres well to the wood fibers (size 0.1 – 3.0 mm), and when Bergquist et al. show a moldable composition of herbaceous cellulose fiber (size 0.025 – 300 mm), not wood cellulose fiber, and polyethylene (a thermoplastic), as the herbaceous fiber has projections that will anchor in the polyethylene?

Regarding claim 17, do Coates et al., together with the combination of Georgette et al. and Bergquist et al., render obvious, under §103(a), a moldable composition of long, hair-like wood cellulose fibers, having a length of at least about 15 mm and diameter of less than about 0.5 mm, and a thermoplastic, and including a small amount of maleic anhydride grafted polypropylene, when Coates et al. show a sandwich of two outer plastic layers, (one of polypropylene and one of polyamide or polyester) using a layer *in the middle* of graft modified maleic anhydride polypropylene, which is a tacky material that is employed in order to adhere the polypropylene layer to a polyamide or polyester layer (the reason for the sandwich being that the polyamide or polyester layer can readily be painted, but the polypropylene layer does not retain paint well), and when Coates et al. do not show any fiber, let alone wood fiber, and when they show a sandwich, not a moldable composition?

GROUPING OF CLAIMS

The claims stand or fall together.

ARGUMENT

Overview of present invention, U.S. Patent No. 5,194,461 to Bergquist et al., U.S. Patent No. 4,380,522 to Georlette et al., and U.S. Patent No. 5,932,357 to Coates et al.

For convenience, the following abbreviations of the polymers are employed below:

PE	polyethylene
HDPE	high density polyethylene
PP	polypropylene
PA	polyamide

and a summary of the present invention as compared to the three cited U.S. patents is presented in the following chart.

	CHART	
Inventor(s)	Thermoplastic (such as PE or PP) or tacky materials that are not thermoplastic (such as graft modified maleic anhydride PE or PP)	Fiber
Jacobsen (present invention, a moldable composition)	thermoplastic, such as PE optionally included may be small amount of graft modified maleic anhydride PP or graft modified maleic anhydride PE, which are <i>not</i> thermoplastic	wood cellulose fiber, long hair-like strands having length at least about 15 mm (0.6 inch) and diameter less than about 0.50 mm (0.02 inch)
Bergquist et al. (invention is a moldable composition)	HDPE, a thermoplastic	herbaceous cellulose fiber, <i>inherently has projections</i> , and thus is a <i>replacement</i> for wood cellulose fiber, no preference for long length nor for narrow diameter, length is 0.001 - 12 inch (0.025 - 300 mm), preferred length is 0.25 - 0.5 inch (6.4 - 12.7 mm)
Georlette et al. (invention is a moldable composition)	graft modified maleic anhydride PE, which is <i>not</i> a thermoplastic, as a <i>replacement</i> for PE, which is a thermoplastic	wood cellulose fiber, i.e., wood flour or wood dust, no preference for long length nor for narrow diameter, particle size is 0.1 - 3.0 mm (0.004 - 0.118 inch)
Coates et al. (invention is a 3-layer sandwich, <i>not</i> a moldable composition)	<i>3-layer sandwich</i> of: PP/graft modified maleic anhydride PP/ PA or polyester to which paint is applied on the PA or polyester layer	<i>no fiber</i>

Discussion of rejection of claims 13 - 16, 18 and 19 as obvious over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al.

In the Final Rejection, the Examiner essentially maintained the same rejections that he set out in the first Office Action. Specifically, the Examiner asserted in the Advisory that wood cellulose fiber, diameter 0.1 to 3.0 mm, from Georlette et al. overlaps with the claimed diameter, that there is no evidence of the criticality of the claimed ranges or amounts, and that motivation exists for combining Georlette et al. with Bergquist et al.

Appellant respectfully submits that the cited references do not teach or suggest each and every element of the invention defined by independent claim 13, and thus, do not teach or suggest each and every element of the invention defined by dependent claims 14, 15, 16, 18, and 19, each of which depends back to claim 13 and incorporates the requirements thereof by reference.

Specifically, independent claim 13 requires a moldable thermoplastic composite composition comprising (1) 20 - 50 weight % wood fiber filler comprising at least 20 % by weight of fiber having a length of at least about 15 mm and a diameter of less than about 0.50 mm and (2) 50 – 80 weight % thermoplastic. This concentration of fiber filler with the claimed dimensions in a moldable composition with a thermoplastic is not found in the references.

In short, Appellant respectfully submits that the Examiner has ignored that Appellant has *solved the problem* of a moldable composition of thermoplastic, such as PE, and wood cellulose fiber, by using a selected amount of long, hair-like wood cellulose fibers, that specifically have a length of at least about 15 mm and a diameter of less than about 0.50 mm.

Appellant's composition exhibits excellent properties for Izod (impact), tensile strength, and flex, as shown by his Table V on page 14 of his specification. Table V illustrates that the more that the long, hair-like fibers are used, to 50 weight % of the fiber, then the better are the properties.

Appellant respectfully points out, as the Examiner should be well aware, that it is impermissible hindsight for the Examiner to employ the teachings of the invention, and to pick and to choose certain selective portions of the references while ignoring other portions of the references, in order to come up with the invention.

More particularly, Georlette et al. recognized there was a problem of wood cellulose fiber and thermoplastic, such as polyolefin for instance PE, in a moldable composition, and specifically state at lines 56 – 61 of column 1 that such compositions “exhibit inadequate properties”. Therefore, instead of PE, they used graft modified maleic anhydride PE, which is *not* a thermoplastic, as a *replacement* for PE, which is a thermoplastic, because graft modified maleic anhydride is tacky and thus adheres well to the wood cellulose fiber.

Moreover, Georlette et al. have no teaching nor suggestion for long length of at least about 15 mm and narrow diameter of less than about 0.50 mm for the fiber. Rather, the Georlette et al. fiber filler consists of small wood fibers, 0.1 mm to 3.0 mm in length, and

appears to fall under the category of “wood flour” or “dust”, numerous examples of which can be found throughout the prior art as noted by the Appellant in his Background of the specification.

Furthermore, Appellant specifically points out that in section 6 on the bottom of page 2 of the Final Rejection, the Examiner stated that:

Georlette [*sic*, Georlette et al.] in col. 4, lines 13-16, does [*sic*, do] suggest the use of unmodified polyolefins.

Appellant respectfully notes that the Examiner is quoting out of context and the *entire paragraph* from line 13 through line 24 needs to be read to see that Georlette et al. are using the unmodified polyolefin to make modified polyolefin.

Georlette et al. do not have a composition of a thermoplastic, such as polyolefin for instance PE, and wood fiber.

Rather, this paragraph at lines 13 – 24 of Georlette et al., as Appellant discussed at the bottom of page 2 of his July 24, 2002 Response to the first Official Action, involves the following:

More specifically, Georlette et al. disclose an *in situ* process, where in the presence of the cellulosic fibers, a chemical reaction takes place between a polar monomer and a polyolefin to create a modified polyolefin, i.e., maleic anhydride grafted polyethylene, which is in a composition with the fibers. Thus, as correctly noted by the Examiner, the modified polyolefins are made by Georlette et al. from polyolefins and polar monomers, such as acrylic acid, methacrylic acid, or maleic anhydride.

However, Georlette et al. do not employ, nor do they suggest, use of thermoplastic, namely unmodified polyolefin such as PE, for a composition of polyolefin and wood fiber. Rather, their composition is modified polyolefin and wood fiber.

The Examiner attempts to make up for the fiber size deficiency in Georlette et al. by relying on Bergquist, et al. for the disclosure of fiber lengths over 15 mm. However, Bergquist et al. merely disclose a huge range of possible fiber lengths, 0.001 - 12 inches (0.025 – 300 mm). They have no teaching nor suggestion for long length of at least about 15 mm and narrow diameter of less than about 0.50 mm for the fiber. Moreover, they use herbaceous fiber, not wood fiber.

More specifically, Bergquist et al. also recognized there was a problem of wood cellulose fiber and PE in a moldable composition. So they used herbaceous cellulose fiber instead with PE because the herbaceous fiber has *projections that will anchor in* the PE. The Bergquist et al. herbaceous cellulose fiber can be short or long, ranging from 0.001 – 12 inches (0.025 – 300 mm), but there is no suggestion whatsoever for long, hair-like fiber.

Neither Georlette et al. nor Bergquist et al. teach or suggest a fiber filler with the claimed physical dimensions of the present invention (i.e., at least about 15 mm length fibers with a diameter of less than about 0.50 mm).

Using long, “hair-like” fibers as a filler, together with thermoplastic, as in the claimed invention, provides significant, non-obvious advantages over the prior art. As Appellant noted above, longer, hair-like fibers that specifically have a length of at least about 15 mm and a diameter of less than about 0.50 mm allow Appellant’s composition to exhibit excellent properties for Izod (impact), tensile strength, and flex, as shown by his Table V on page 14 of his specification. Table V illustrates that the more that the long, hair-like fibers are used, then the better are the properties. Moreover, when the longer fibers are “hair-like” (i.e., less than about 0.50 mm diameter as claimed) the distribution of the fiber filler in the composite matrix is optimized. Thus, fibers having the claimed dimensions contribute significantly to the goal of a stronger thermoplastic composite product.

The prior art fails to recognize and thus to realize the advantages which Appellant has achieved in his invention by providing a selected concentration of long fibers that have a length of at least about 15 mm and a diameter less than about 0.50 mm in a moldable composition of wood fiber and thermoplastic. If this feature were indeed obvious, it would have been disclosed in at least one of the references relied upon by the Examiner.

Discussion of rejection of claim 17 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al., as applied to claims 13 and 16, and further in view of U.S. Patent No. 5,932,357 to Coates et al.

Dependent claim 16 depends on independent claim 13, and further includes a small amount of a coupling agent. Dependent claim 17 depends on dependent claim 16, and requires that the coupling agent is maleic anhydride grafted polypropylene. Thus, claim 17 is directed to a moldable thermoplastic composite composition, as claim 17 incorporates by reference the requirements of claim 13.

Also in the Final Rejection, the Examiner again rejected the invention defined in dependent claim 17 by relying on U.S. Patent No. 5,932,357 to Coates et al. for the idea of enhancing adhesion by adding graft modified maleic anhydride polypropylene to Appellant’s claimed composition, which composition the Examiner believes is obvious from Georlette et al. in view of Bergquist et al.

The comments above vis-à-vis Georlette et al. and Bergquist et al. are reincorporated here by reference with respect to claim 17.

Specifically with respect to Coates et al., they show a sandwich of PP/graft modified maleic anhydride PP/PA or polyester.

Appellant respectfully submits that clearly, the Examiner has ignored that Coates et al. do not disclose a moldable composition, but rather disclose a *sandwich of 3 distinct layers*. The

sandwich employs a middle layer of the graft modified maleic anhydride PP, because it is tacky, to adhere the outer PP layer of plastic to an outer PA or polyester layer of plastic. The reason is that the PA or polyester layer can readily be painted, but the PP layer does not retain paint well.

Coates et al. do not show any fiber, let alone a *moldable composition* of thermoplastic and fiber with a small amount of graft modified maleic anhydride PP, as is being claimed in claim 17.

Thus, the prior art fails to recognize and thus to realize the advantages which Appellant has achieved in his invention by providing a selected concentration of long fibers that have a length of at least about 15 mm and a diameter less than about 0.50 mm in a moldable composition of wood fiber and thermoplastic, where the composition has a small amount of graft modified maleic anhydride PP.

CONCLUSIONS

Given the advantages of the claimed composite composition explained above and in the specification, and the fact that Georlette et al. and Bergquist et al. fail to show or to suggest each element of claim 13, Appellant respectfully submits that the references do not suggest the presently claimed invention, either singly or taken in any reasonable combination.

Thus, Appellant respectfully requests the Board to instruct the Examiner to withdraw the rejection of claims 13-16, 18 and 19 under 35 U.S.C. §103(a) over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al.

Also, Appellant respectfully submits that Coates et al. show a sandwich, not a moldable thermoplastic composition, and thus, they add nothing to the combination of Georlette et al. and Bergquist et al.

Thus, Appellant respectfully requests the Board to instruct the Examiner to withdraw the rejection of Claim 17 under 35 U.S.C. §103(a) over U.S. Patent No. 4,380,522 to Georlette et al. in view of U.S. Patent No. 5,194,461 to Bergquist et al., as applied to claims 13 and 16, and further in view of U.S. Patent No. 5,932,357 to Coates et al.

For the foregoing reasons, the Appellant respectfully submits that claims 13-19 are in condition for allowance, and respectfully requests the Board to instruct the Examiner to issue an allowance of the application.

DEPOSIT ACCOUNT

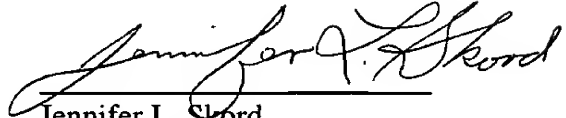
Although a check in the amount of \$1170.00 (Small Entity Status) is enclosed (\$165.00 for the fee for the Appeal Brief and \$1005.00 for the fee for the 5-month extension of time) and thus it is believed that no further fee is due, the Commissioner is authorized to charge any

deficiencies of payment associated with this Communication, or to credit any overpayment, to Deposit Account No. 13-4365.

Respectfully submitted,

Date: January 5, 2004

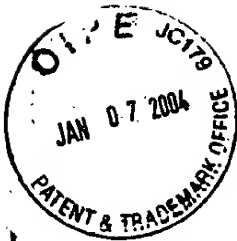
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Enclosures:

In triplicate, Appeal Brief and its Appendix (of claims 13 – 19 on Appeal)
Petition for a 5-month extension of time
\$1170.00 check (Small Entity Status -- \$165.00 fee for the Appeal Brief + \$1005.00
fee for the 5-month extension of time)



(Appln. No. 09/900,129)

APPENDIX OF PENDING CLAIMS ON APPEAL

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13. A moldable thermoplastic composite composition, comprising:

about 20 to about 50 percent by weight of a discontinuous lignocellulose wood fiber filler, the discontinuous lignocellulose wood fiber filler comprising at least about 20 percent by weight of discontinuous lignocellulose wood fibers having a length of at least about 15 millimeters and a diameter of less than about 0.50 millimeters, and

about 50 to about 80 percent by weight thermoplastic.

14. The moldable thermoplastic composite composition as recited in claim 13, wherein the thermoplastic is selected from polyethylenes, polypropylenes, polyanimides, polyvinyl chloride, ABS, polystyrene, polyester and mixtures thereof.
15. The moldable thermoplastic composite composition as recited in claim 13, wherein the thermoplastic is derived from post consumer or post industrial waste sources.
16. The moldable thermoplastic composite composition as recited in claim 13, further comprising about up to about 10 percent of a coupling agent.
17. The moldable thermoplastic composite composition as recited in claim 16, wherein the coupling agent is up to about 5 percent maleic anhydride grafted polypropylene, and the thermoplastic is about 45 to about 75 percent polypropylene.

18. The moldable thermoplastic composite composition as recited in claim 16, wherein the coupling agent is up to about 5 percent maleic anhydride grafted polyethylene, and the thermoplastic is about 45 to about 75 percent polyethylene.
19. The moldable thermoplastic composite composition as recited in claim 16, wherein the coupling agent is up to about 10 percent ethylene methacrylic or acrylic acid, and the thermoplastic is about 40 to about 70 percent of polyethylenes, polypropylenes, polyanimides, polyvinyl chloride, ABS, polystyrene, polyester or mixtures thereof.